

Claims

1. A liposome for fusing with a yeast cell, the liposome characterised in that about 40-50 molar % of the liposome lipid bilayer is phosphatidyl choline (PC), about 10-20 molar % of the liposome lipid bilayer is a cationic amphiphile, about 10 molar %
5 of the liposome lipid bilayer is a sterol and about 30 molar % of the liposome lipid bilayer is phosphatidyl ethanolamine (PE) and/or dioleoylphosphatidylethanolamine (DOPE).
2. A liposome according to claim 1 wherein about 50 molar % of the liposome lipid bilayer is PC.
- 10 3. A liposome according to claim 1 wherein about 20 molar % of the liposome lipid bilayer is cationic amphiphile.
4. A liposome according to claim 1 wherein about 30 molar % of the liposome lipid bilayer is PE.
5. A liposome lipid bilayer according to claim 1 wherein about 30 molar %
15 of the liposome lipid bilayer is DOPE.
6. A liposome according to claim 1 wherein the sterol is ergosterol.
7. A liposome according to claim 1 wherein the sterol is cholesterol.
8. A liposome according to claim 1 wherein the cationic amphiphile is 1,2-dioleoyl-*sn*-glycero-3-trimethylammonium-propane (DOTAP).
- 20 9. A liposome according to claim 1 wherein the liposome lipid bilayer further comprises oleic acid.
10. A liposome according to claim 9 wherein about 5 molar % of the liposome lipid bilayer is oleic acid.
11. A liposome according to claim 1 wherein the liposome further comprises a
25 molecule to be introduced into a yeast cell.
12. A liposome according to claim 11 wherein the molecule is an exogenous molecule.

13. A liposome according to claim 11 wherein the molecule is an enzyme for hydrolysing a RNA molecule to form a ribonucleotide in a yeast cell.

14. A liposome according to claim 13 wherein the enzyme is a 5' phosphodiesterase.

5 15. A liposome according to claim 14 wherein the 5' phosphodiesterase is phosphodiesterase 1 (orthophosphoric diester phosphohydrolase, EC 3.1.4.1).

16. A liposome according to claim 11 wherein the molecule is an enzyme for deamination of adenylate to form a 5'-inosine phosphate nucleoside.

10 17. A liposome according to claim 16 wherein the enzyme is 5'-adenyl deaminase.

18. A liposome according to claim 11 wherein the molecule is useful for producing fermentation products such as proteins, amino acids, nucleic acids, sugars, organic compounds and monosodium glutamate.

15 19. A liposome according to claim 1 wherein the liposome has a diameter between 100 and 400 nm.

20. A liposome according to claim 1 wherein the liposome lipid bilayers destabilise at a pH of about 5.0 to 6.0.

21. A process for preparing a yeast cell for fusion with a liposome comprising treating the yeast cell to form a yeast cell spheroplast, or a yeast cell protoplast.

20 22. A process for introducing an exogenous molecule into a yeast cell spheroplast or protoplast comprising contacting a yeast cell spheroplast or protoplast with a liposome comprising the molecule in conditions for permitting the spheroplast or protoplast to receive the liposome.

25 23. A process according to claim 22 wherein the liposome is according to claim 1.

24. A process for producing a yeast cell spheroplast or protoplast comprising an exogenous molecule comprising contacting a yeast cell spheroplast or protoplast with

a liposome comprising the molecule to permit the spheroplast or protoplast to receive the liposome.

25. A process according to claim 24 wherein the liposome is according to claim 1.

5 26. A yeast cell, spheroplast or protoplast produced by the process of claim 24.

27. Use of a yeast cell according to claim 26 for producing a food, foodstuff, additive or an ingredient for producing a food or foodstuff.

10 28. A food, food stuff, additive or ingredient for production of a food or food stuff, produced by a yeast cell according to claim 26.

15 29. A process for producing a flavouring enhancer in a yeast cell comprising treating a yeast cell to form a spheroplast or protoplast, contacting the spheroplast or protoplast with a liposome according to claim 13 or 16 to permit the spheroplast or protoplast to receive the liposome and providing conditions for function of the enzyme of the liposome in the yeast cell to produce the flavour enhancer.

30. A flavour enhancer produced by the process of claim 29.